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Surgeons' Responses to a Surgical Mortality Audit: Accepting and Improving: A Cross Sectional Survey ☆,☆☆



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ABSTRACT

Background: Surgeons strive to provide the best care possible to their patients. The Australian and New Zealand Audit of Surgical Mortality is a process for improving surgical care and outcomes via peer-review assessment of mortality cases. This article examines the acceptability of the assessments to Queensland surgeons, in addition to examining their impact on surgical care.

Methods: This study was a cross-sectional survey. Evaluation forms were sent to all Queensland surgeons who had received a first-line assessment with clinical incidents identified or a second-line assessment (with or without clinical incidents), between April 2018 and January 2020 ($n = 484$). A total of 102 evaluation forms were returned, giving a response rate of 21%.

Results: Most respondents agreed that their assessments were fair (78%) and informative (69%). Almost half (43%) agreed that their assessment improved the subsequent surgical care they provided. Comments supported this, with surgeons describing reflections, meetings and changes that had occurred following their assessments. Despite the strong proportion of positive comments, some surgeons disagreed with the opinions or recommendations of their assessors. A large percentage (41%) was neutral towards the ability of the assessments they had received to improve surgical care at the hospital level.

Conclusions: There was a high degree of acceptance of the QASM peer-review assessment process. The assessments facilitated discussion, reflection and implementation of surgical care improvements in Queensland surgeons. Further research into this topic should involve refinement of the study tool with a larger, and therefore more representative, proportion of the surgical population.

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Introduction

The Australian and New Zealand Audit of Surgical Mortality (ANZASM) is a peer-review assessment and feedback process which aims to improve surgical processes and outcomes. These assessments invite individual surgeons to critically reflect on, and thereby improve, their surgical practice and decision-making.¹ In addition to improving surgical outcomes for patients, surgical audits such as these have been shown to reduce healthcare costs.

In Australia, 2.7 million hospital admissions involve surgery—one quarter of the total annual hospitalisations.² Between 2009 and 2016, a total of 33,450 surgical deaths occurred in Australian hospitals.³ Globally, an estimated 313 million surgical procedures occur annually.⁴ World mortality data is incomplete, however postoperative death is estimated to occur in at least 4.2 million people each year.⁴ To reduce preventable surgical mortalities, there is a clear role for the ongoing reflection stimulated by surgical audits to drive continuous improvement of surgical care.

There has been some investigation into the impact of ANZASM on population-level quality indicators.³ National surgical mortality rates decreased 18% in association with ANZASM's activities over the period 2005 to 2013.⁵ Likewise, the national proportion of cases with one or more identified adverse events decreased 25% from 2008 to 2016.⁶ The Western Australia surgical mortality audit has been associated with improved management of DVT prophylaxis, fluid management and anticoagulation procedures.⁷ However, even though the data is strong, it is difficult to establish definitive connections between ANZASM and the improved indicators because of the probable presence of confounders. These confounders include education via population-level symposiums and meetings, and general improvements in healthcare that have occurred in tandem with ANZASM's practices over this time period.⁷ To clarify the contributions of these confounders, it is important to determine the ways in which individual surgeons interact with, and respond to, ANZASM assessments.

At the level of the individual surgeon, the role of ANZASM in improving surgical care has not been well researched. A previous evaluation of Western Australian surgeons found that 73% of respondents reported changing their surgical practice in at least one way due to the audit.⁸ More recently, one-third of Victorian⁹ and Queensland¹ surgeons who completed similar evaluations reported improving their surgical care due to the audit. In particular, Queensland surgeons perceived changes in key areas such as communication, documentation, and specific clinical procedures such as anticoagulants and fluid balance. This was strongly prevalent in surgeons who also participated in the audit as assessors.

However, these surveys evaluated the audit process rather than asking surgeons to reflect on an individual assessment. There has been a lack of recent, in-depth research into the acceptability of these surgical mortality audit assessments to the surgeons themselves. To enable this, surgeons need to report on how they interact with these assessments in order to improve their surgical processes and decision-making.

This paper aimed to further explore the role of surgical mortality audits in surgical quality improvement by analyzing their ability to improve the practice of individual surgeons. It also examined the acceptability of these assessments to surgeons.

Methods

The Queensland Audit of Surgical Mortality (QASM) is a component of ANZASM, conducting peer-review assessment of surgical practice and decision-making in surgical mortality cases in the state of Queensland. This includes all cases where the patient was under the care of a surgeon, or there was a possibility of anesthesia-related death, or where death occurred within 48 hours of surgery.¹⁰ In all such cases, the treating surgeon is required to complete a surgical case form with all relevant details. This is then de-identified and sent for first-line assessment (FLA) by a surgeon of the same specialty. If recommended by the first-line assessor, a more thorough and forensic second-line assessment (SLA) is done referencing medical records.

Clinical incidents are areas of care that may have been done better. There are three levels of clinical incidents. Firstly, an area of CONSIDERATION is where the clinician believes areas of care COULD have been IMPROVED or DIFFERENT but recognizes that it may be an area of debate. Secondly, an area of CONCERN is where the clinician believes that areas of care SHOULD have been better. Thirdly, an ADVERSE EVENT is an unintended injury caused by medical management rather than by disease process, which is sufficiently serious to lead to prolonged hospitalization or to temporary or permanent impairment or disability of the patient at the time of discharge, or which contributes to the death.

Only those surgeons qualified as a Fellow of the Royal Australasian College of Surgeons (FRACS) are eligible to complete QASM assessments. The QASM office sends cases for assessment only to surgeons of the same sub-specialty – e.g. a neurosurgeon would assess only neurosurgical cases; a vascular surgeon would assess only vascular cases. Once completed, all assessments and feedback are returned to the original surgeon for reflection. Surgeons unhappy with their assessments are contacted by the QASM clinical director and offered the opportunity for reassessment. Only Fellows with FRACS qualifications were eligible to participate in this survey. Conversely, no surgeons with a FRACS qualification were considered ineligible to participate.

Study design and participants

This was a cross-sectional survey design utilizing the QASM peer-review assessment evaluation form. A QASM database was used as the source for all qualified surgeons in the state. As most reviewed cases pass through the audit system without receiving any comments from assessors (85%), the form was sent only to Queensland surgeons who had received either an FLA with clinical incidents identified or an SLA (with or without clinical incidents). The study period was April 1, 2018 to January 16, 2020. Data was collected and de-identified

in accordance with QASM processes. This was a quality assurance activity, so ethics approval was not required.¹

Study instrument

The assessment evaluation form comprised five questions asked of surgeons, beginning with:

- What type of peer-review assessment (FLA or SLA) did you receive for this case?

Participants then answered three Likert-type questions with answers ranging from 'strongly agree' to 'strongly disagree':

- The peer-review assessment for this case was fair.
- The peer-review assessment for this case was informative.
- The peer-review assessment for this case was able to improve surgical care at your hospital.

They were then asked to contribute to an open comments section:

- Please provide additional comments...

Data analysis

All responses were de-identified and compiled into a Microsoft Excel spreadsheet. Likert-type questions were grouped as acceptance (agree and strongly agree responses), neutrality (neutral responses) and rejection (disagree or strongly disagree responses). The frequency of each response for each question was calculated to determine relative frequencies. Free-form comments were themed using an inductive thematic approach.¹¹ These themes were then discussed by the research team and agreed upon, with any differences of opinion resolved.

Results

Response rate

From April 1, 2018 to January 16, 2020, QASM delivered 279 SLAs and 1795 FLAs to Queensland surgeons. A total of 484 evaluation forms were sent to these surgeons, 226 of which were for FLA recipients with clinical incidents identified and 258 of which were for SLA recipients.

One hundred and two evaluation forms were returned (21% response rate). Of these, one-third (38%) were from FLA recipients and two-thirds (62%) were from SLA recipients.

Surgeon responses to Likert-type questions: Perceived assessment fairness, ability to inform and ability to improve surgical care

Most respondents agreed that their assessment was fair (78%) and informative (69%). Nearly half (43%) of respondents agreed that the assessment of their case improved their subsequent surgical care. However, a similar number (41%) remained neutral on this matter.

Thematic analysis of open comments section

There were 64 respondents who chose to leave a comment regarding their assessment and the QASM process. After analysis, the following key themes emerged:

Assessment acceptability to surgeons

Overall, 40 respondents expressed opinions regarding the acceptability of their assessment. More than twice as many respondents ($n = 25$) agreed with their assessment compared with those who disagreed ($n = 11$). Four respondents agreed and disagreed with different points of their assessment.

Comments indicating total acceptance of the assessment tended to be general, without noting any specific positive points ($n = 25$). Many were accompanied by further explanations of case facts and reasoning. Examples include:

'Excellent. Very respectful and insightful summarized feedback. Much appreciated'

'Fair and appropriate consideration of events. Many thanks to the assessors.'

'All noted and reflected upon'

'This 2nd line assessment was very thoughtful and balanced. Reading through it gave me food for thought and the time they spent giving such valuable feedback was very much appreciated'

'I accept the recommendations of the review'

Several comments indicated partial acceptance of specific points of the assessment but rejected others. Examples include:

'I agree that percutaneous drainage of gall bladder is an important way of treating bad gallbladder in frail patients. I do not know whether this was achievable in this case . . . The outcome would have probably been the same.'

'I agree the pre-op management was faulted . . . I do not believe this contributed to the bad outcome.'

Of the negative comments, most had specific points of the assessment that they disagreed with. Common points of contention were technical opinions, such as the assessor's opinion on the decision to operate and the surgical procedure used:

'I have concerns about the first-line assessor's opinion about the surgical strategy that was adopted . . . It is disconcerting that the assessor feels that the surgical strategy which was devised after extensive opinion and multidisciplinary case conferences contributed to the demise of the patient.'

'I disagree with the comments of the assessor. The assessor feels surgery should have been done sooner . . . I strongly disagree that such a high-risk operation should have been performed immediately without an attempt at nonoperative management and observation.'

'I do not feel the decision to operate was in any way contributing to her death.'

Improvement on surgical care

Several of the comments discussed the impact of QASM peer-review assessment on the improvement of surgical care. For example:

'All questions and comments are reasonable and had been anticipated by the surgical team. Valuable lessons learnt and enforced by the independent opinion.'

Two surgeons identified a specific point of procedure that they had reflected upon and would have changed:

'Thank you for all the efforts made on this review . . . I would only change closure of peritoneum within linea alba suture to avoid the 1st post-op bleed.'

'You might like to feedback to the assessing surgeon that the reason for the malpositioned (sic) catheter was technical error on behalf of the operating (consultant) surgeon (i.e. me). I didn't account for the length of the attachment nipple . . . when I calculated the required catheter length.'

Several surgeons identified that they had reflected on the case in question with other relevant staff:

'I have discussed this assessment with my cardiology/cardiac surgical team . . . The assessment recommends [procedure]. We do not think this would have been a reasonable option in our opinion.'

'I had a discussion with the treating team about the management of the complication. . .'

Another surgeon identified a point of surgical practice that had previously been changed due to QASM assessments:

' . . . Consideration to proceed with insertion of EVD without posterior fossa decompression was only considered as the unit has received previous external feedback in QASM assessments that an EVD should be trialed in these cases. I do, however, agree that the insertion of EVD was unlikely to alter the outcome of the case and therefore avoid a palliative outcome.'

Several comments mentioned how QASM assessments have been discussed in hospital staff meetings, and how surgeons and other hospital staff would be implementing QASM feedback in the future:

'We discussed the issues at our own unit audit meeting and highlighted the issues of delivering care to outlying patients housed in wards when our own systems are not in place.'

' . . . unfortunately it appears that documentation of this was lacking. This will be discussed at a unit meeting in view of the importance of medical communication.'

'In our audit meeting this subject of intraoperative monitor has come up several times and this peer review assessment was also tabled in the meeting and I am happy neurosurgeons involved and hospitals concerned will now use the monitor system as a routine in eloquent area of the brain.'

External factors affecting case outcomes and/or decisions

Many comments related to the presence of external factors affecting surgical outcomes and/or decisions.

- Six surgeons emphasized the impact that other staff and surgeons had on the surgical care of their patients.
- Five surgeons detailed the impact of families on decisions to operate, palliation and treatment delays.
- Three surgeons commented on the impact of lack of resources on surgical outcomes, particularly regarding delays.
- Three surgeons discussed the impact of patient input and delays on surgical care.

Discussion

Queensland surgeons showed a high degree of acceptance of QASM peer-review assessments. Most respondents judged them to be fair and informative, and these opinions were supported by many positive comments. However, it was difficult to determine which characteristics made the assessment acceptable or unacceptable to a surgeon, as comments tended to be general. It is thus difficult to recommend how this already high degree of acceptance can be improved upon, at least amongst those who completed the evaluation form. Some surgeons did specify reasons for their disagreement, and these tended to result from clashes between the opinions of the assessors and the opinions of the surgeons. It is expected and/or believed that this overall acceptance of QASM assessments has contributed to improved surgical care among surgeon respondents.

Almost half (43%) of respondents agreed that their assessment would improve surgical care at their hospital. This number is consistent with that reported in the literature.^{1,9} The comments outlined above illustrate how improvements can occur from surgeons reflecting on their assessments individually or with colleagues. They also show the breadth of surgical issues influenced by QASM assessments, from individual improvements to specific and more technical changes in external-ventricular drain (EVD) insertion and neurosurgical monitoring systems. These are significant impacts, given that genuine improvements in surgical care contribute to reductions in unnecessary healthcare costs.¹

Despite this positive result, a similar number of respondents (41%) were neutral on the ability of their assessments to improve surgical care. This is surprising, given that most assessments were perceived as fair and informative. One reason for this may be negative perceptions of QASM from surgeons, due to the perceived increased workload and fatigue that has been previously reported in this setting.⁹ Other contributors could be surgeons describing external factors impacting on their surgical care, or those who disagreed with their assessments in other ways.

This illustrates a key issue in translating surgeon assessments into improved practice when surgeons are defensive about their assessment in some way. Furthermore, those surgeons who, for various reasons, did not perceive their care as 'able' to be changed, were reluctant to accept that their QASM assessment recommendations could improve their care. These issues occurred despite the high level of acceptance and improvements evident amongst individual surgeons receiving QASM assessments. This may reflect poor wording of this question on the evaluation form. Further ex-

ploration of this group with a larger sample size and revised evaluation form may help to elucidate the impact of these assessments on surgeons.

Strengths

There are several strengths to QASM's approach to improving the quality of surgical care. All surgical mortality cases in Queensland are assessed by this process—in both the public and private sectors—and all surgeons participate in the audit. This ensures improvement of surgical care on a population level. In addition, surgeons receive individualized feedback on their cases, allowing them to reflect on their own performance and skills. Lastly, a key strength of QASM and the other Australian surgical mortality audits is that it is an internationally unique process. No other country in the world can boast such a thorough review of its surgical cases. As all surgical subspecialties were included, external validity can be assumed, and other countries may benefit by adopting this process.

Limitations

There are several limitations evident in this study. Three of the questions used Likert scales which, while common, assume that each level of their continuum is equal.¹² This is often not the case, leading to a tendency to draw erroneous conclusions regarding the 'strength' of agreement or disagreement.¹² Secondly, the survey instrument used has not been validated, hindering the accuracy and generalizability of the survey findings.¹³ Lastly, the response rate for the evaluation forms was quite low, at 21%. While not an unusual number for the surgeon and health professional

There was a high degree of acceptance of QASM peer-review assessments, as population,^{9,14} it may have affected study validity and contributed to biases within the sample. Reporting bias is probably present in the surgeons' answers and the direction of that bias could not be determined and could not be controlled for. No statistical analysis was done as there were no quantifiable variables used in the study.

Conclusion

Most surgeons agreed that they were fair and informative. Almost half of the eligible surgeons also agreed that QASM assessments had stimulated change in their surgical practices. In particular, the assessments were noted as initiating discussions amongst hospital staff for improving surgical care. They also discussed better management of certain procedures such as EVD insertion and neurosurgical monitoring systems.

Despite these successes, there was a high degree of neutrality towards the ability of assessments to be an effective process and really improve surgical care. This may be due to surgeon disagreements with assessors' opinions, and external factors outside the control of the individual surgeon but mentioned as clinical incidents, nevertheless. It may also be time-related, reflecting busy surgeon workloads.

Overall, the results show that these assessments can facilitate genuine discussion, reflection and implementation of surgical care improvements in Queensland surgeons. Further research on this topic should involve extended development of the study tool to be tested on a larger sample of the surgeon population. Work should also be done to include opinions about the peer review process from surgeons who did not have clinical incidents with their cases.

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